

PSB-1000 Series Multi-Range DC Power Supply New Product Announcement

GW Instek debuts the PSB-1000 series, which is a single output channel, programmable and multi-range DC power supply. The series comprises 400W models: PSB-1400L (40V/40A); PSB-1400M (160V/10A), and 800W models: PSB-1800L (40V/80A); PSB-1800M (160V/20A). The maximum voltage output of 320V can be realized by placing 160V units in series connection. By connecting PSB-1800L units in parallel, the maximum current output of 320A can be achieved. The PSB-1000 series is a bench-top power supply featuring user friendly interface, which can clearly display setting conditions and measurement results via LCD display and menu-typed functionality selection without referring to the user manual. All settings can be done by functionality keys, numerical keys, and speed dial keys. The 30A output capability from the front terminal of the PSB-1000 series can better meet the requirements of laboratories and scientific R&D units.



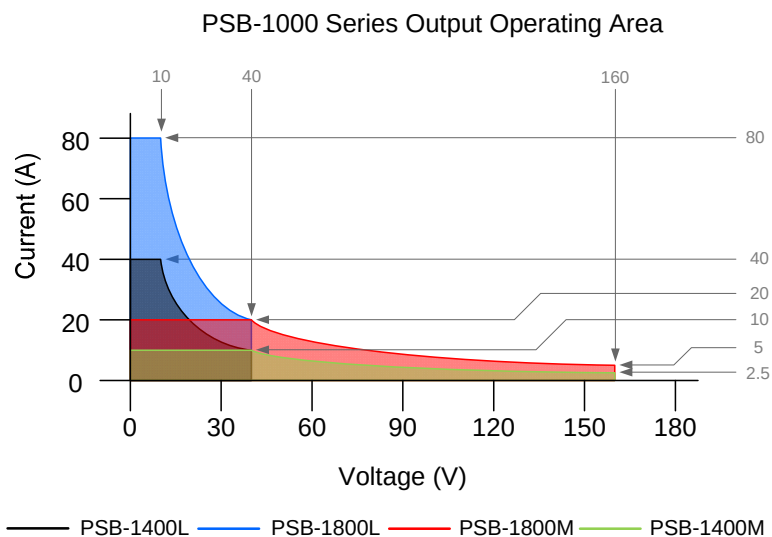
The PSB-1000 series features user friendly menu-typed functionality interface and its built-in functionalities can better meet industry's application requirements. Both front panel and rear panel output terminals of the PSB-1000 series facilitate researchers to access power output conveniently. The display panel adopts menu-typed functionality selection to help users quickly familiarize with settings and operation that is extremely suitable for on-site engineers and R&D engineers who deal with complicated functional setting requirements. The Bleeder function helps rapidly bleed internal capacitors to avoid potential danger of discharging electric charge. For battery's charging applications, users can set Bleeder to Disable to avoid impact on battery charging applications. The I/V Control function, based upon DUT's requirements, sets rise and fall speed of voltage and current respectively to effectively reduce surge voltage and current output as well as to measure DUT characteristics. The CC priority output mode can be utilized to protect diode characteristic load and LED load from being damaged by inrush current. Sequence Function (SEQ), via editing Excel charts and uploading them to the instrument, automatically executes the required output waveforms to meet the requirements of related regulations and tests. The automatic execution of the sequence function is often applied to planning a set of continuous voltage variation to assess DUT characteristics. For instance, producing a series of voltage variation output to test impact on automotive fans is one of the reliability test applications. Power On Configuration allows users to select previously set SEQ to carry out automatic execution as soon as power is turned on. For production lines demanding sequential power supply output application requirements, tremendous time can be saved by this function, which exempts users from resetting sequential power supply when power is turned on every single time.

Voltage Trigger allows users to set pulse signals for leading edge threshold and trailing edge threshold. VOLT TRIG can be applied to ATS by providing output time for working voltage via BNC adapter. The Output Delay function facilitates users to respectively set action time for power output on and power output off for multiple sets of PSB-1000 so as to realize sequential power output applications.

The PSB-1000 series is equipped with multi range power output capability providing fourfold rated power output to meet customers' flexible application requirements. The models and operating area of the entire series are as the following chart:

Model name	Output Voltage	Output Current	Output Power
PSB-1400L	40	40	400
PSB-1400M	160	10	400
PSB-1800L	40	80	800
PSB-1800M	160	20	800

Operating Area



Parallel/Series Operation

To augment output power so as to meet customers' large voltage and large current requirements, the PSB-1000 series, via placing two same model units in series connection, will be able to produce twofold rated voltage output, and through connecting four same model units in parallel, the PSB-1000 series can produce fourfold rated current output. The maximum voltage output of 320V can be achieved via placing the PSB-1000 series in series connection, and the maximum current of 320A and the maximum power of 3200W can be obtained through parallel connection.

Parallel connection	1 unit	2 units	3 units	4 units
PSB-1400L	40V	40V	40V	40V
	40A	80A	120A	160A
PSB-1400M	160V	160V	160V	160V
	10A	20A	30A	40A
PSB-1800L	40V	40V	40V	40V
	80A	160A	240A	320A
PSB-1800M	160V	160V	160V	160V
	20A	40A	60A	80A

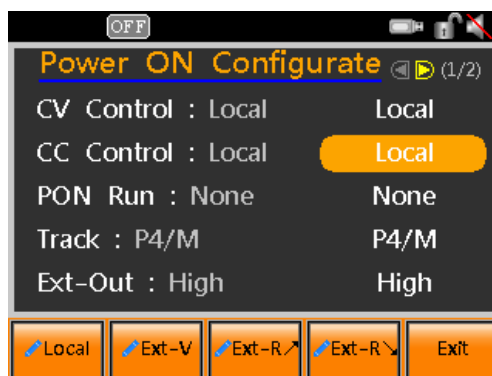
Series connection	1 unit	2 units
PSB-1400L	40V	80V
	40A	40A
PSB-1400M	160V	320V
	10A	10A
PSB-1800L	40V	80V
	80A	80A
PSB-1800M	160V	320V
	20A	20A

Power On Configuration

The PSB-1000 series provides different Power On Configurations for different users. Users can also set automatic execution procedures to be carried out as soon as power is turned on. After presetting Power On Configuration, each rebooting will have a short activation display to show present settings of Power On Configuration of the PSB-1000 series. The execution will be conducted by the power on mode.

Power On Configuration Parameters Include:

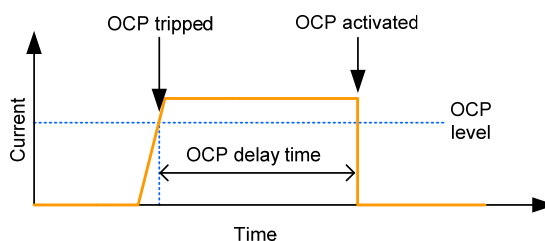
- 1) CV control settings: Local(master), Ext-V(external voltage control), Ext-R↗, Ext-R↘ (external resistance control)
- 2) CC control settings: Local(master), Ext-V(external voltage control), Ext-R↗, Ext-R↘ (external resistance control)
- 3) PON automatic execution while power on: None (non execution), Output On (automatic output while power is on), SEQ0~SEQ9 (automatic sequence execution while power is on)
- 4) Track series and parallel settings: Local (master operation), S/Slave (set as Slave under the series connection mode), P/Slave (set as Slave under the parallel connection mode), P2-P4/M (set as Master under the parallel connection mode)
- 5) Ext-Out external analog output control: Set High to indicate pin18-19 open circuit (Open) power output
Set Low to indicate pin18-19 short circuit (Short) power output
- 6) Breaker: Set Enable (while alarm is sounded, PSB-1000 will shut down automatically)
Set Disable (while alarm is sounded, PSB-1000 will cease outputting)
- 7) Sense Control: Set Disable (non activation of internal Remote sense terminal)
Set Rear (activation of rear panel internal Remote sense terminal)
Set Front (activation of front panel internal Remote sense terminal)



POC setting screen

Enable OCP Control

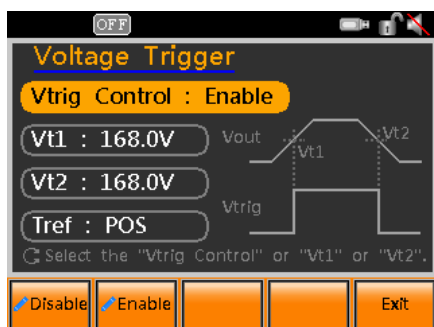
The On/Off of the OCP protection function can be selected from the master display screen and the OCP activation time can delay 0.1~2.0 seconds. This function can protect customers' DUTs from over current to avoid unexpected operations which lead to DUT damage caused by over current.



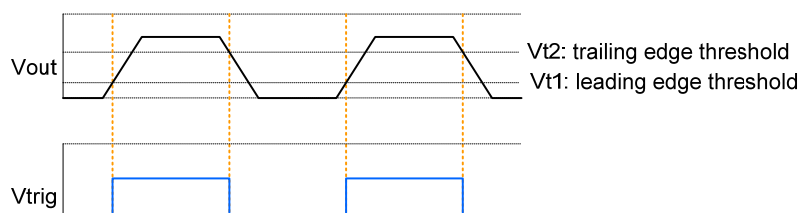
Enable OCP Control

Voltage Trigger

Voltage Trigger allows users to set pulse signals for leading edge threshold V_{t1} and trailing edge threshold V_{t2} . VOLT TRIG can be applied to provide output time for working voltage via BNC adapter. Users can determine positive or negative voltage trigger signals by Tref.



Voltage Trigger setting

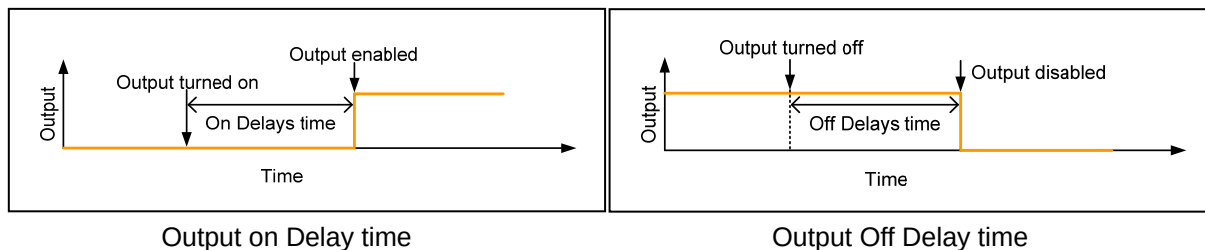


Vtrig timing chart

Output Delay

Power output and on/off facilitate flexible planning and setting with respect to time.

- Set On Delays time to delay 0.00 ~ 100.00 seconds for power output
- Set Off Delays time to delay 0.00 ~ 100.00 seconds for power off

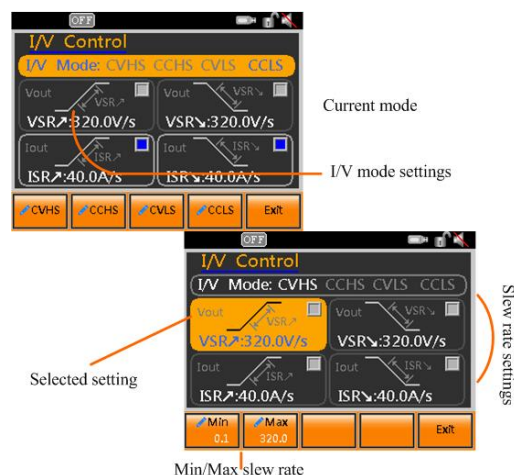


I/V Control

CV and CC priority can be set based upon customers' application requirements. The speed of voltage rise (V/s) or voltage fall (V/s), and the speed of current rise (A/s) or current fall (A/s) can be set respectively.

The PSB-1000 series provides customers with the following four modes to meet their requirements.

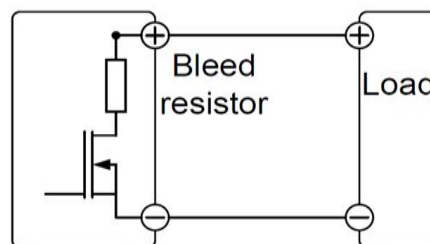
- CVHS→voltage with maximum speed Slew Rate
- CCHS→current with maximum speed Slew Rate
- CVLS→users set voltage Slew Rate
- CCLS→users set current Slew Rate



I/V Control screen

Bleeder Circuit Control

The PSB-1000 series power supply has a bleeder circuit control which is in parallel with the output terminal. When power is off or load is disconnected, bleed resistor will consume electricity from the filter capacitor. Without a bleed resistor, the filter capacitor of power could still be charged with electricity that poses a potential danger. In addition, for ATE system, bleed resistor allows the PSB-1000 series to bleed current rapidly so as to prepare itself for the next operation.



The PSB-1000 Series Bleeder Circuit

Average Settings

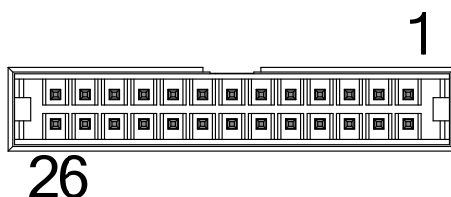
Allow users to decide measurement average to be output based upon the requirements. Under Low level, the real time average can be displayed. On the contrary, under the High level, the higher average will be displayed.

Sequence Function

There are 10 sets of the Sequence function for customers to determine record settings. Automatically executing sequential waveforms can be done without the PC. For instance, sequential power output simulates the power supply of DUT's aging battery to understand the impact on DUT's characteristics.

Analog Programming Connector Function

On the rear panel of the PSB-1000 series, a 26-pin analog control terminal is designed to perform remote control and monitoring functions. External voltage or resistor can be utilized to set output voltage and current. The power supply output on/off control and master power shut-down can also be controlled by using the external switch. The analog control terminal is complied with the Mil 26-pin connector (OMRON XG4 IDC plug) standard.



Features, Advantages and Benefits

Features	Advantages	Benefits
User friendly user interface	Operation without referring to user manual	Settings can be done quickly to saves time
Automatic levels and multi range operation	Under fixed power, larger voltage and current application range and output can be covered.	Customers save costs to meet demands of various power supply ranges
I/V control function	Decide the rise and fall time of voltage and current	Benefit customers in detailed analysis and testing characteristic applications
2 PSB-1000 units in series connection or 4 units in parallel connection	Provide larger voltage and current output capacity	Meet customers'large power application requirements
LAN, USB, external analog remote control terminal and GPIB support	Support multiple communications protocols and connection monitor applications	Satisfy users in connection operation and automatic control
Set OCP function and delay function from the front panel	Allow users to rapidly set OCP function	Protect customers' DUTs from unexpected operations which lead to DUT damage caused by over current.
External analog remote control terminal	Monitor& control via simple voltage, resistor, and on/off switch	Easy-to-use operation

Features	Advantages	Benefits
Voltage Trigger	Customers decide trigger level to produce pulse signals	Customers can flexibly control peripheral devices
voltage sense internal control connection	Via activating internal connection to activate voltage sense	Swiftly activate voltage sense compensation function to save time from manual connection

Target Markets and Associated Features

1. The C.C priority output mode is ideal for the test and verification of the LED illumination industry and load with diode characteristics.
2. Module applications such as LED lights and battery cell pack

Feature Competition

	GW INSTEK	TDK Lambda	KIKUSUI	Keysight
	PSB-1000Series	Z+ series	PAS-Series	N5700A
User friendly functional operation	V	X	X	X
Multi Range Output (V & I)	V	X	X	X
CC/CV slew rate	V	X	X	X
POC	V	X	V	V
Series & Parallel Operation	V	V	V	V
Self define Voltage Trigger output	V	X	X	X
External Analog Control Interface	V	V	V	V
Interface	USB/LAN;option: GPIB	USB/RS232/RS485;option:LAN	USB/GPIB/RS232C	GPIB/LAN/USB/LXI
Series & Parallel operation	V	V	V	V
Sequence Function	V	V(Waveform editing)	X	X
Protection : OPP 、 OVP 、 OTP	OVP/OCPI/OTP	OVP/UVPI/OTP	OVP/OCPI/OHP	OVP/OCPI/OTP
voltage sense internal control connection	V	X	X	X

Key Dates for Product Announcement

- 1) Distributor Announcement & Demo Unit order and Shipping: 31st of Aug. 2015
- 2) Global Market Announcement & Mass Quantity Order Fulfillment: 15th of Sept. 2015

PSB-1000 Product Positioning

- 1) Ideal for bench-top requirement. R&D and QA units require user friendly panel operation, and front panel output applications.
- 2) The PSB-1000 series is a user friendly user interface bench top power supply. With augmented panel convenience, the series is ideal for on-site engineers, R&D, and laboratories.
- 3) Multi range selection and series/parallel connection provide a wider application range.

Ordering Information

PSB-1400L (40V / 40A / 400W) Programmable Multi-Range DC Power Supply

PSB-1400M (160V / 10A / 400W) Programmable Multi-Range DC Power Supply

PSB-1800L (40V / 80A / 800W) Programmable Multi-Range DC Power Supply

PSB-1800M (160V / 20A / 800W) Programmable Multi-Range DC Power Supply

Accessories

User manual

Programming manual

Power cord

Output terminal cover

Type A-B USB cable

Analog connector plug set

Chassis connection wire

Optional Accessories

PSW-001 Analog remote control connector kit

PSW-002 Simple IDC tool

PSW-003 Contact removal tool

PSB-101 Cable for 2 units of PSB-1000 units in parallel mode connection

PSB-102 Cable for 3 units of PSB-1000 units in parallel mode connection

PSB-103 Cable for 4 units of PSB-1000 units in parallel mode connection

PSB-104 Cable for 2 units of PSB-1000 units in series mode connection

PSB-105 GPIB card

PSB-106 PSB-106 basic accessory kit

GRA-418-J Rack-mount adapter(JIS)

GRA-418-E Rack-mount adapter(EIA)

GTL-123 Test leads: 1x red, 1x black

Service Policy

- 1) One year warranty. PSB-1000 series Programmable DC Power Supply carries a standard warranty for 1 year.
- 2) The service instructions in the Service Manual will help distributors repairing damage units promptly. The parts-swapping service support is provided by Good Will Instrument to facilitate the repair jobs done at the distributor's site.

Specifications

PSB-1000		1400L	1400M	1800L	1800M
OUTPUT RATING					
Output voltage(V)		0~40	0~160	0~40	0~160
Output current(A)		0~40	0~10	0~80	0~20
Output power(W)		400W	400W	800W	800W
REGULATION (CV)					
Load regulation (mV)		25	85	25	85
Line regulation (mV)		23	83	23	83
REGULATION (CC)					
Load regulation (mA)		45	15	85	25
Line regulation(mA)		45	15	85	25
RIPPLE & NOISE (Noise Bandwidth 20MHz ; Ripple Bandwidth = 1MHz)					
CV p-p		60	60	80	80
CV rms		7	12	11	15
CC rms		80	20	160	40
PROGRAMMING ACCURACY					
Voltage	0.1% +	10	50	10	50
Current	0.1% +	20	10	40	20
MEASUREMENT ACCURACY					
Voltage	0.1% +	10	50	10	50
Current	0.1% +	20	10	40	20
RESPONSE TIME					
Raise Time		50	100	50	100
Fall Time(Full load)		50	150	50	150
Fall Time(No load)		500	1200	500	1200
Load Transient Recover Time(Load change from 50 to 100%)		1	1	1	1
PROGRAMMING RESOLUTION (By PC Remote Control Mode)					
Voltage		1	3	1	3

Current		1	1	2	1
MEASUREMENT RESOLUTION (By PC Remote Control Mode)					
Voltage		1	3	1	3
Current		1	1	2	1
SERIES AND PARALLEL CAPABILITY					
Parallel Operation		Up to 4 units including the master unit			
Series Operation		Up to 2 units including the master unit			
PPROTECTION FUNCTION					
OVP		4-44	5-176	4-44	5-176
OCP		4-44	1-11	5-88	2-22
OHP		Turn the output off.			
FRONT PANEL DISPLAY ACCURACY, 4 digits					
Voltage	0.1% +	20	100	20	100
Current	0.1% +	20	10	40	20
ENVIRONMENT CONDITION					
Operation Temp		0°C to 40°C			
Storage Temp		-25°C to 70°C			
Operating Humidity		20% to 85% RH; No condensation			
Storage Humidity		90% RH or less; No condensation			
OTHER					
Analog Control		Yes			
Interface		USB/LAN/GPIB(Optional)			
Power Source		100Vac to 240Vac, 50Hz to 60Hz, single phase			
Dimension & Weight		214×124×350			
		Approx. 5.2kg	Approx. 6.8kg	Approx. 5.2kg	Approx. 6.8kg

Should you have any questions on the PSB-1000 Series announcement, please don't hesitate to contact us.

Sincerely yours,

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